



With fall upon the Great Plains, now is the time to focus attention to winter weather and the dangers it can pose to life and property. **November 6th, 2014** has been declared as Winter Weather Awareness Day for the state of Nebraska. Each year, dozens of Americans die due to exposure to the cold. Account for vehicle accidents and fatalities, fires due to dangerous use of heaters and other winter weather fatalities, and you have a significant threat. Other hazards, such as hypothermia and frostbite, can lead to the loss of fingers and toes or cause permanent internal injuries and even death. The very young and the elderly are among those most vulnerable to the potentially harsh winter conditions. Recognizing the threats and knowing what to do when they occur could prevent the loss of extremities or save a life.


A winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall and cold temperatures. People can be trapped at home or in a car with no utilities or assistance, and those who attempt to walk for help could find themselves in a deadly situation. The aftermath of a winter storm can have an impact on a community or region for days, weeks, or possibly months.

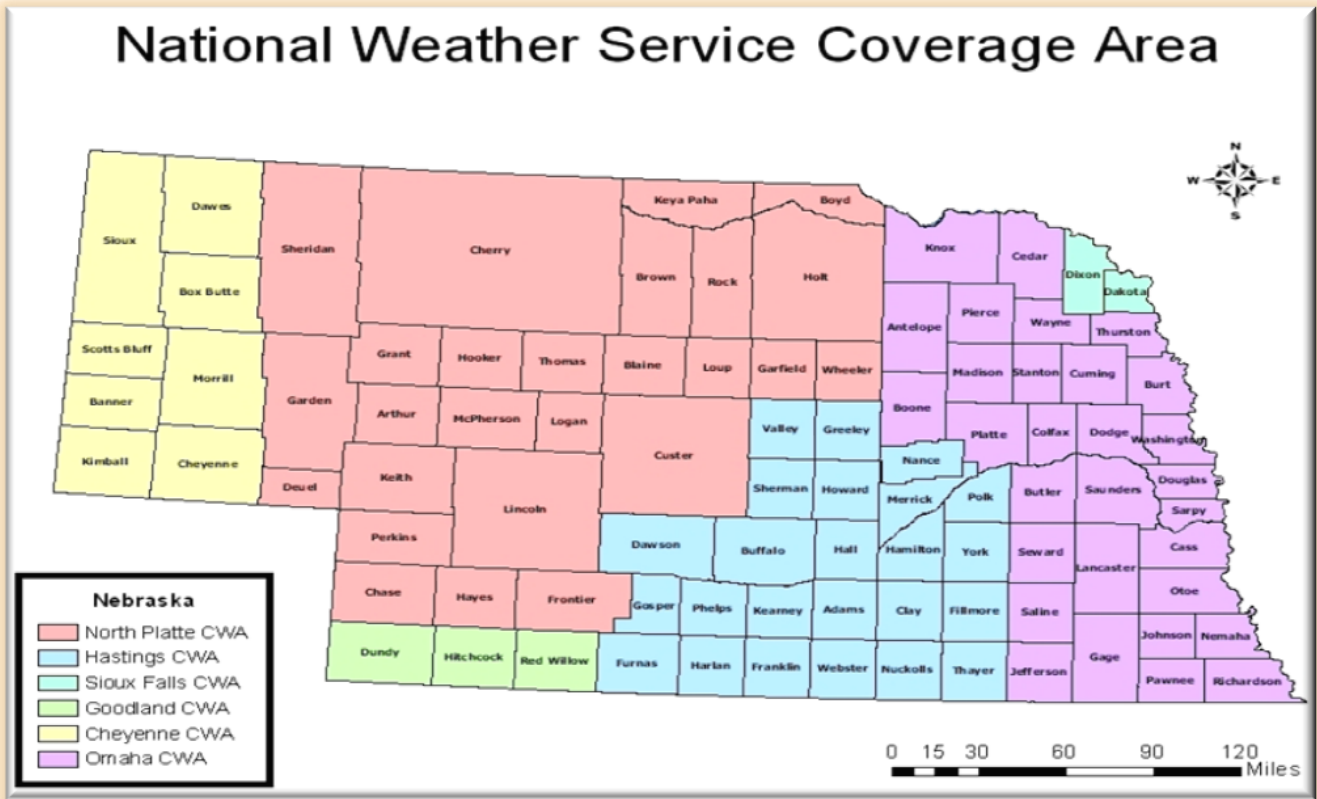
Wind - Some winter storms have extremely strong winds which can create blizzard conditions with blinding, wind driven snow, drifting, and dangerous wind chills. These intense winds can bring down trees and power poles, can reduce visibilities to white-out conditions, and can also cause damage to homes and other buildings.

Snow - Heavy snow accumulations can immobilize a region and paralyze a city, stranding motorists, stopping the flow of supplies, and disrupting emergency services. Buildings may collapse and trees and power lines can be destroyed from the heavy snow. In rural regions, homes and farms may be isolated for days and livestock could be lost.

Cold - Extremely cold temperatures can accompany winter storms and be left in their wake. Infants and the elderly are most susceptible to exposure to the cold, which can cause potentially life-threatening conditions such as hypothermia and frostbite. Below freezing temperatures can damage vegetation and cause pipes to freeze and burst inside homes.

Ice - Heavy ice accumulations can bring down objects like trees, utility poles, power lines and communication towers. Power can be disrupted or lost for days while utility companies repair the damage. Even a small amount of ice can cause hazardous conditions for motorists and pedestrians.

 Weather-Ready Nation <small>National Oceanic and Atmospheric Administration</small>	
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<p style="text-align: center; color: red;"><u>Far West</u></p> <p>National Weather Service 1301 Airport Parkway Cheyenne, WY 82001 (307) 772-2468</p> <p>http://www.weather.gov/cys</p>	<p style="text-align: center; color: red;"><u>West and North Central</u></p> <p>National Weather Service 5250 E. Lee Bird Drive North Platte, NE 69101 (308) 532-4936</p> <p>http://www.weather.gov/lbf</p>	<p style="text-align: center; color: red;"><u>Southwest</u></p> <p>National Weather Service 920 Armory Road Goodland, KS 67735 (785) 899-7119</p> <p>http://www.weather.gov/gld</p>
<p style="text-align: center; color: red;"><u>South Central</u></p> <p>National Weather Service 6365 N. Osborne Drive West Hastings, NE 68901 (402) 462-4287</p> <p>http://www.weather.gov/gid</p>	<p style="text-align: center; color: red;"><u>East</u></p> <p>National Weather Service 6707 North 288th Street Valley, NE 68064 (402) 359-5166</p> <p>http://www.weather.gov/oax</p>	<p style="text-align: center; color: red;"><u>Far Northeast</u></p> <p>National Weather Service 26 Weather Lane Sioux Falls, SD 57104 (605) 330-4247</p> <p>http://www.weather.gov/fsd</p>



Working with the Federal Communication Commission's (FCC) Emergency Alert System, NWR is an "All Hazards" radio network, making it your single source for comprehensive weather and emergency information. In conjunction with Federal, State, and Local Emergency Managers and other public officials, NWR also broadcasts warning and post-event information for all types of hazards, including natural (such as tornadoes or floods), environmental (such as chemical releases or oil spills), and public safety (such as AMBER alerts or 911 telephone outages).

Known as the "Voice of NOAA's National Weather Service," NWR is provided as a public service by the National Oceanic and Atmospheric Administration (NOAA), part of the Department of Commerce. NWR includes 1000 transmitters, covering all 50 states, adjacent coastal waters, Puerto Rico, the U.S. Virgin Islands, and the U.S. Pacific Territories. NWR requires a special radio receiver or scanner capable of picking up the signal, found in the VHF public service band at these seven frequencies (MHz):

Coverage information and SAME Codes for every county in Nebraska can be found at:

<http://www.weather.gov/nwr/Maps/PHP/NE.php>



Key Words to Know - What is the Difference?

OUTLOOK - Hazardous Weather Outlooks are issued everyday, and serve as a "heads-up" that a significant weather event may be possible in the next 7 days.

ADVISORY - An advisory is issued when winter weather events could cause a significant inconvenience, but could also lead to life threatening conditions if not cautious.

WATCH - A watch is issued when winter weather events have the potential to threaten life and property, but the exact timing and location of the storm is uncertain. Watches are normally issued between 12 to 48 hours in advance.

WARNING - A warning is issued when winter weather events are occurring or are imminent and pose a threat to life and property. Warnings are normally issued between 2 and 24 hours in advance.

Winter Weather Product Criteria

Winter Weather Advisory Products (In addition to these thresholds, impacts that cause significant inconvenience or could lead to life threatening conditions if not cautious)

- ♦ **Freezing Rain Advisory** - Small accumulation of ice (freezing rain and/or freezing drizzle), generally less than 1/4 of an inch.

- ♦ **Winter Weather Advisory**

For Snow - Snow accumulation of 3 to 5 inches in 12 hours.

For Sleet - Accumulation of ice pellets less than 1/2 of an inch.

For Snow & Blowing Snow - Snowfall with blowing snow intermittently reducing visibility to less than 1/2 of a mile.

- ♦ **Wind Chill Advisory** - Wind Chill values of -20°F to -29°F .



Watch Products

- ♦ **Blizzard Watch** - Conditions are favorable for a blizzard event in the next 12 to 48 hrs.
- ♦ **Winter Storm Watch** - Conditions are favorable for a winter storm event (Heavy Sleet, Heavy Snow, Ice Storm, Heavy Snow and Blowing Snow or a combination of events) to meet or exceed local Winter Storm Warning criteria in the next 12 to 48 hrs.
- ♦ **Wind Chill Watch** - Conditions are favorable for wind chill temperatures to meet or exceed Wind Chill Warning criteria in the next 12 to 48 hours.

Warning Products (In addition to these thresholds, impacts that pose a threat to life and property)

- ♦ **Blizzard Warning** - Sustained wind or frequent gusts greater than or equal to 35 miles per hour accompanied by falling and/or blowing snow, frequently visibilities less than 1/4 of a mile for at least 3 hours.
- ♦ **Ice Storm Warning** - Widespread ice accumulation of 1/4 of an inch or more.
- ♦ **Winter Storm Warning** - Heavy Snow (snow accumulation of 6 inches or more in 12 hours or 8 inches or more in 24 hours), Sleet (accumulation of ice pellets 1/2 of an inch and greater), Ice (accumulation of 1/4 of an inch or more) and/or heavy Snow and Blowing Snow (wind is below blizzard criteria).
- ♦ **Wind Chill Warning** - Wind chills -30°F or colder

Remember to dress for the season!!

- ♦ Try to stay dry.
- ♦ Wear loose-fitting, light-weight, warm clothing in several layers. Trapped air between these layers can insulate. Layers can be removed to avoid perspiration and subsequent chills.
- ♦ Outer garments should be tightly woven, water repellent, and hooded.
- ♦ Always wear a hat, as half of your body heat can be lost from the head.
- ♦ Mittens, snug at the wrist, are better than gloves.



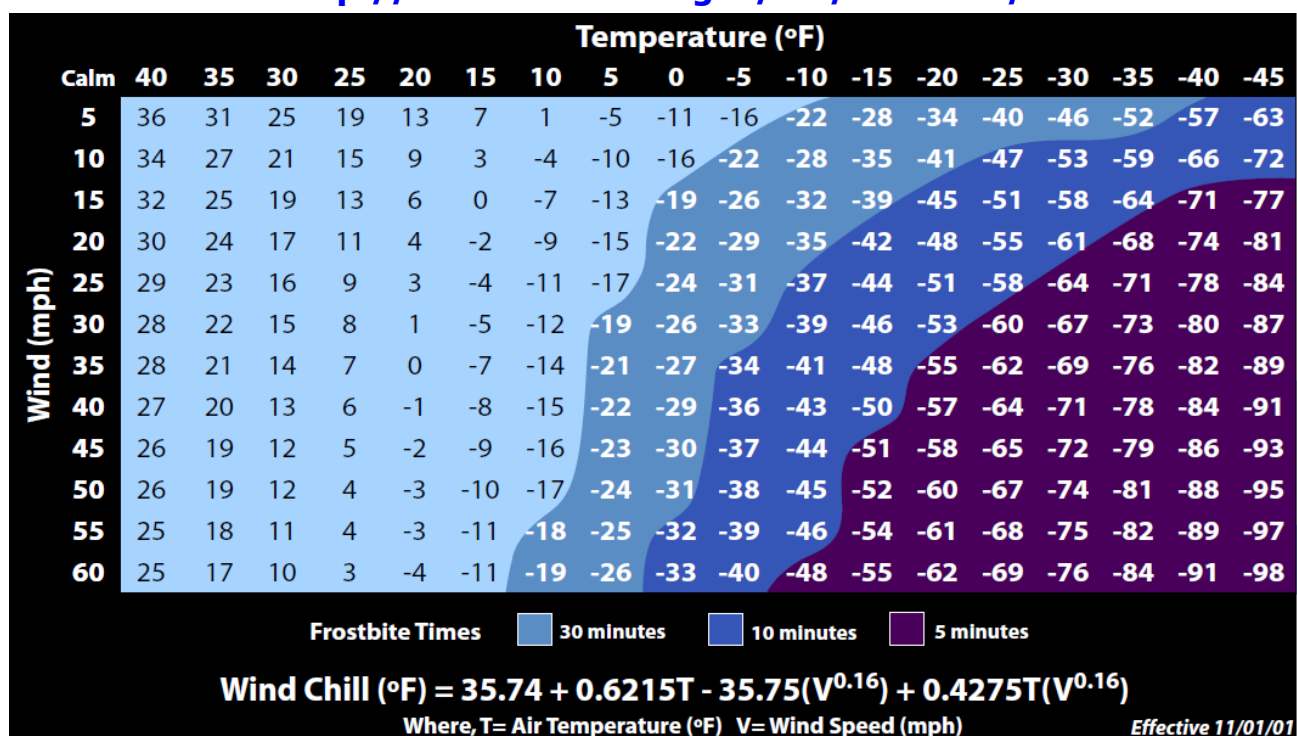


Exposure to cold can cause frostbite or hypothermia and become life-threatening. Infants and elderly people are most susceptible. What constitutes extreme cold varies in different parts of the country. In the south, near freezing temperatures are considered extreme cold. Freezing temperatures can cause severe damage to citrus fruit crops and other vegetation. Pipes may freeze and burst in homes that are poorly insulated or without heat. Further north, extreme cold means temperatures well below zero.

Wind Chill - is not the actual temperature, but rather how the combination of wind and cold temperatures feel on exposed skin. It is based on the rate of heat loss from exposed skin, and as the wind speed increases, heat is carried away from the body at an accelerated rate, driving down the body temperature. Wind chill will also impact animals, but not impact inanimate objects such as cars or exposed water pipes, because they cannot cool below the actual air temperature.

The NWS Wind Chill Index uses advances in science, technology, and computer modeling to provide an accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures. More information about the Wind Chill Index can be found at :

<http://www.nws.noaa.gov/om/windchill/>

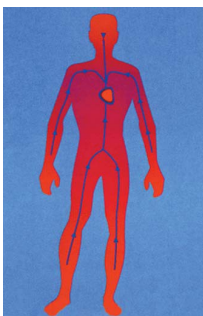




Frostbite - is damage to body tissue caused by extreme cold. A wind chill of -20°F will cause frostbite in just 30 minutes. Frostbite causes a loss of feeling and a white or pale appearance in extremities, such as fingers, toes, ear lobes or the tip of the nose. If symptoms are detected, get medical help immediately! If you must wait for help, slowly rewarm affected areas. However, if the person is also showing signs of hypothermia, warm the body core before the extremities.



Hypothermia - is a condition brought on when extremities are excessively cold, and the body temperature drops to less than 95°F. It can kill. For those who survive, there are likely to be lasting kidney, liver and pancreas problems. Warning signs include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and apparent exhaustion. Take the person's temperature. If below 95°F, seek medical care immediately!



If Medical Care is Not Available - warm the person slowly, starting with the body core. Warming the arms and legs first drives cold blood toward the heart and can lead to heart failure! If necessary, use your body heat to help. Get the person into dry clothing and wrap in a warm blanket covering the head and neck. Do not give the person alcohol, drugs, coffee or any hot beverage or food. Warm broth is the first food to offer.

Remember to Avoid Overexertion!

Avoid activities such as shoveling heavy snow, pushing a car, or walking in deep snow. The strain from the cold and the hard labor could cause a heart attack, and sweating could lead to a chill and hypothermia. Take Red Cross CPR and AED training so you can respond quickly to an emergency.

Did You Know?

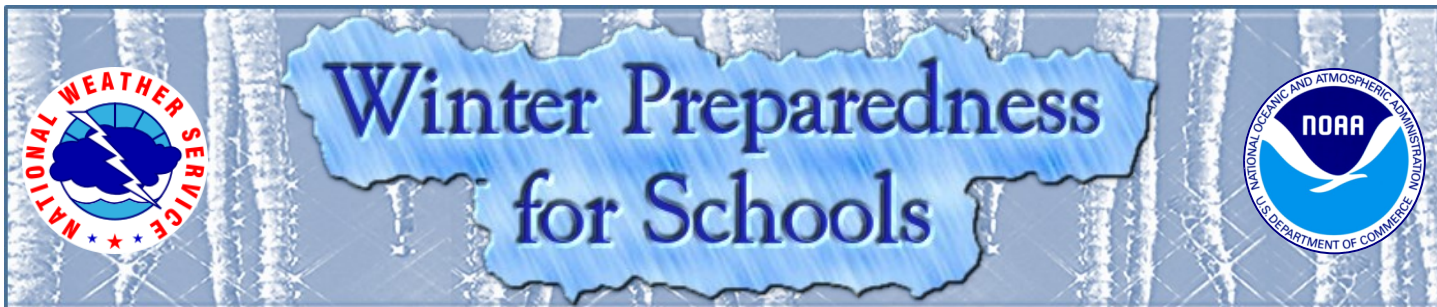
Injuries Related to Cold:

- ♦ 50% happen to people over 60 years old
- ♦ More than 75% happen to males
- ♦ About 20% occur in the home



Injuries Related to Ice and Snow:

- ♦ About 70% result from vehicle accidents
- ♦ About 25% occur to those caught in a storm
- ♦ Most happen to males over 40 years old



Winter Weather Preparedness For Schools

Gathering Information

- Know where to get weather information: Utilize NOAA Weather Radio, local Media sources, Internet and paging services.
- Know how and where to get road Information: State Highway Departments or Law Enforcement are often your best sources for road conditions. City and county transportation or school officials and drivers or security teams are also excellent sources.

Alerting Students and Staff

- Alert students and staff to take action: Use mobile communications for bus drivers and a PA system for school staff and students.

Activating a Plan

- Determine when to activate a plan: Gather information about the type of winter storm, expected impact and time of impact on the school district. The primary decision will be whether to cancel, delay or hold classes as usual. In Watch situations, immediate action will usually not be required. When a Warning or Advisory is issued, assess the weather situation by monitoring forecasts, current weather conditions and road conditions.

Canceling or Delaying Classes

- Determine when to cancel or delay classes: How much time do you have before the storm impacts the area? Not only must students be transported to school safely, but also back home via bus, car or on foot. What kind of an impact will the storm make? Will roads be impassable or will road conditions just have a minimal effect on transportation of students, causing only small delays?



School Bus Driver Actions

- For heavy snow or blowing and drifting snow: Be familiar with alternate routes, stay up to date on the latest forecast, and maintain communication with school officials.
- For ice storms: Remain alert for downed trees, utility lines, and other road hazards. Be familiar with alternate routes. Stay up to date on the forecast and maintain communication with school officials.
- Extreme cold: Learn to recognize and treat symptoms of hypothermia and frostbite.

Safety Instruction

- Educate school staff and students: Conduct drills and hold safety programs annually.
- Participate in Winter Weather Preparedness Day campaigns.
- Contact your local Emergency Manager or National Weather Service Office for a speaker to discuss winter weather safety.



Be Prepared Before the Storm Strikes!

When preparing your home or workplace for the upcoming winter season, keep in mind that the primary concerns deal with the loss of heat, power and telephone service, along with a shortage of supplies if a winter storm continues for an extended period of time.

Make sure to have the following supplies available:

- ♦ Flashlight and extra batteries
- ♦ Battery-powered NOAA Weather Radio and portable radio to receive emergency information - these may be your only links to the outside
- ♦ Extra food and water. Have high energy food, such as dried fruit, nuts and granola bars, and food which requires no cooking or refrigeration.
- ♦ Extra medicine and baby items
- ♦ First-aid supplies
- ♦ Heating fuel. Refuel BEFORE you are empty. Fuel carriers may not reach you for days after a winter storm.
- ♦ Emergency heat source: fireplace, wood stove, space heater
 - Use properly to prevent a fire and remember to ventilate properly.
- ♦ Fire extinguisher and smoke alarm
 - Test smoke alarms once a month to ensure they work properly.

On the farm and for pets:



- ♦ Move animals into sheltered areas.
- ♦ Shelter belts, properly laid out and oriented, are better protection for cattle than confining shelters.
- ♦ Haul extra feed to nearby feeding areas.
- ♦ Have plenty of water available. Most animals die from dehydration in winter storms.
- ♦ Make sure your pets have plenty of food, water and shelter.



What should I do if caught...

Outside:



- ♦ Find shelter!
- ♦ Attempt to stay dry.
- ♦ Cover all exposed body parts.
- ♦ If there is no shelter available:
 - Build a lean-to, windbreak, or snow cave to protect yourself from the wind.
 - Build a fire for heat and to attract attention.
 - Place rocks around the fire to absorb and reflect heat.
 - Melt snow for water, eating snow will lower your body temperature.

In a Vehicle:

- ♦ Stay in the vehicle! You could quickly become disoriented in wind-driven snow and cold.
- ♦ Run the motor about 10 minutes each hour for heat.
- ♦ Open the window a little for fresh air to avoid carbon monoxide poisoning.
- ♦ Make sure the exhaust pipe is not blocked.
- ♦ Be visible to rescuers!
 - Turn on the dome light at night when running the engine
 - Tie a colored cloth, preferably red, to your antenna or door
 - After the snow stops falling, raise the hood to indicate you need help
- ♦ Exercise from time to time, move arms, legs fingers, and toes vigorously to keep blood circulating and to keep warm.



Inside:



- ♦ Stay inside!
- ♦ When using alternate heat from a fireplace, wood stove, space heater, etc., use fire safeguards and properly ventilate.
- ♦ If you don't have heat available:
 - Close off unneeded rooms.
 - Stuff towels or rags in cracks under doors.
 - Cover windows at night.
- ♦ Eat and drink, providing the body with energy and preventing dehydration.
- ♦ Wear layers of loose-fitting, lightweight, warm clothing. Remove layers to avoid perspiration and subsequent chill.



Along with your home and workplace, vehicles also need to be prepared for the upcoming winter season. It is very important to fully check and winterize your vehicle, which includes having a mechanic check your battery, antifreeze, wipers, windshield washer fluid, ignition system, thermostat, lights, exhaust system, heater, brakes, and oil levels.

If you must travel during winter conditions, it is best not to travel alone. Try to plan your travel during the day, and make sure to let others know your destination, route, and when you expect to arrive. Make sure to keep your gas tank near full to avoid ice in the tank and fuel lines.

Always carry a Winter Storm Survival Kit in your car!!

- ♦ Mobile phone, charger and batteries
- ♦ Flashlight with extra batteries
- ♦ First-aid kit
- ♦ Knife
- ♦ Shovel
- ♦ Tool kit
- ♦ Tow rope
- ♦ Battery booster cables
- ♦ Compass and road maps
- ♦ A windshield scraper and brush or small broom for ice/snow removal
- ♦ Blankets and sleeping bags, or newspapers for insulation
- ♦ Rain gear, extra sets of dry clothes, socks, mittens, and stocking caps



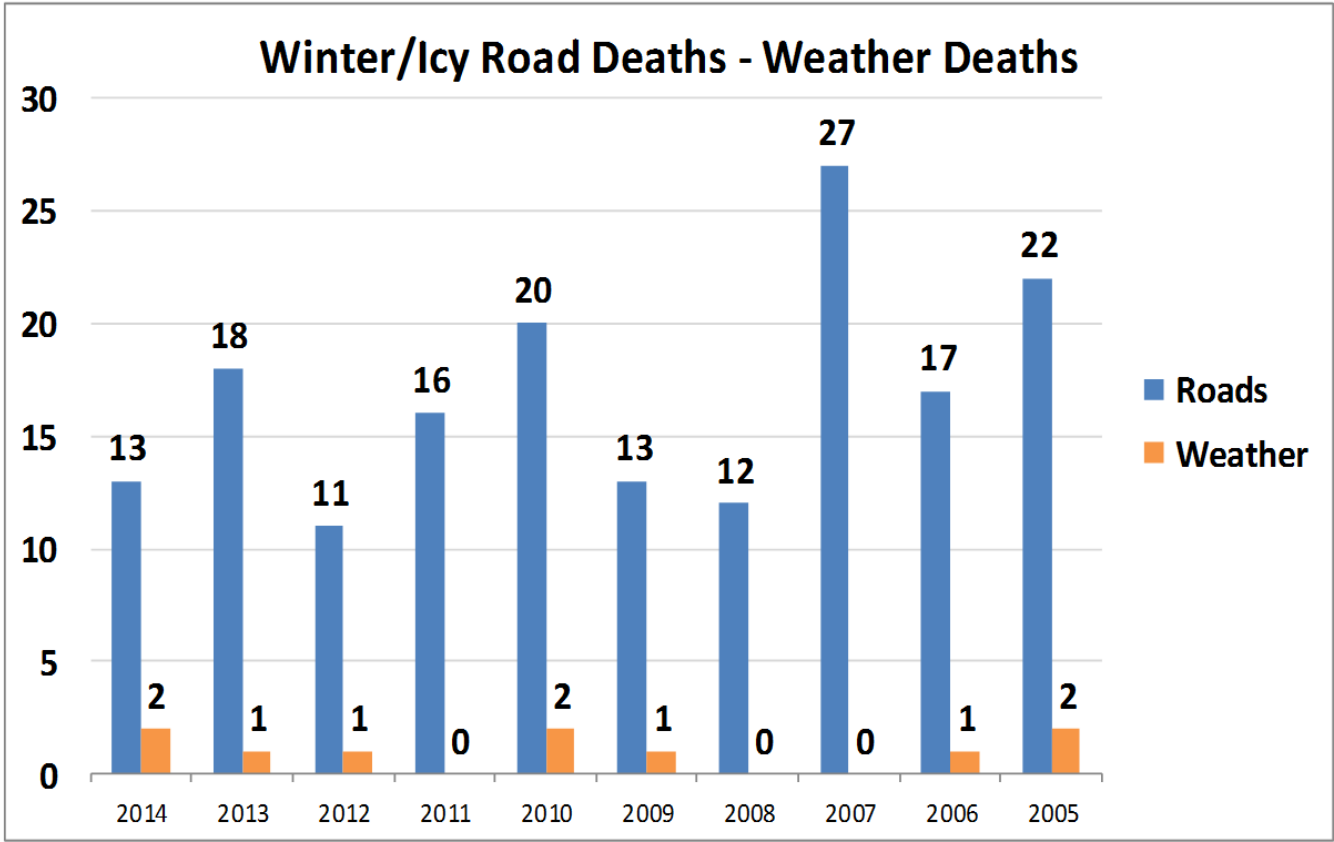
- ♦ Large empty can to use as emergency toilet. Tissues, paper towels, and plastic bags for sanitary purposes
- ♦ Small can and waterproof matches to melt snow for drinking water
- ♦ Cards, games, and puzzles
- ♦ High calorie, non-perishable food, such as canned fruit, nuts, and high energy "munchies" (Include a non-electric can opener if necessary)
- ♦ A small sack of sand or cat litter for generating traction under wheels and a set of tire chains or traction mats.
- ♦ A brightly colored (preferably red) cloth to tie to the antenna





Nebraska Winter Weather/Icy Road Deaths

Wintry weather poses a significant threat to life and property. According to the Nebraska Department of Roads, in 2014 so far, there have been 13 deaths attributed to winter weather and icy conditions on roads. On average over the last 10 years, **17** people die each year due to accidents on roads impacted by winter weather. **This is far higher** than those deaths attributed to tornadoes, floods, lightning, heat, and cold combined! Information in this packet can help you be prepared for the upcoming winter driving season.



Sources:

Road Deaths: State of Nebraska - Department of Roads

Weather Deaths: NOAA Office of Services and the National Climatic Data Center





Road Conditions

Before you travel, check out the latest road conditions. Road report information across Nebraska can be found at the Nebraska Department of Roads web site at:

<http://www.511.nebraska.gov>

For Nebraska **in-state information call 511.**

When out of state call: 1-800-906-9069

South Dakota: <http://www.safetravelusa.com/sd/>

Out of state: 1-866-MY-SD511 (1-866-697-3511)

Wyoming: <http://map.wyroad.info/>

Out of state: 1-888-WYO-ROAD (1-888-996-7623)

Colorado: <http://www.cotrip.org/roadConditions.htm>

Out of state: 1-303-639-1111

Kansas: <http://511.ksdot.org/>

Out of state: 1-866-511-KDOT (1-866-511-5368)

Missouri: <http://traveler.modot.org/map/>

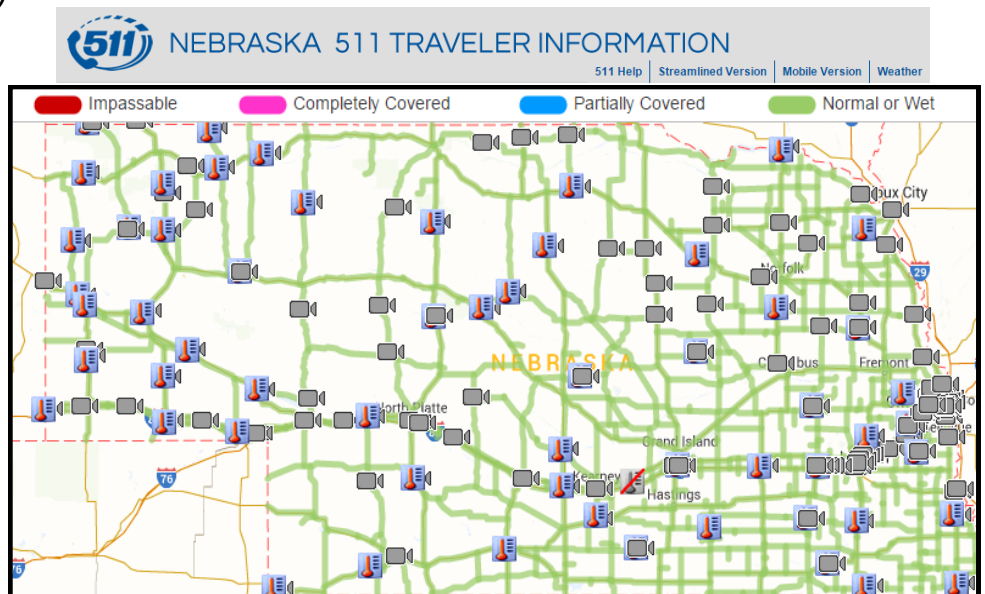
Out of state: 1-888-ASK-MDOT
(1-888-275-6636)

Iowa: <http://511ia.org>

Out of state: 1-800-288-1047

National Traffic and Road
Closure Information can be
found at:

<http://www.fhwa.dot.gov/trafficinfo/index.htm>

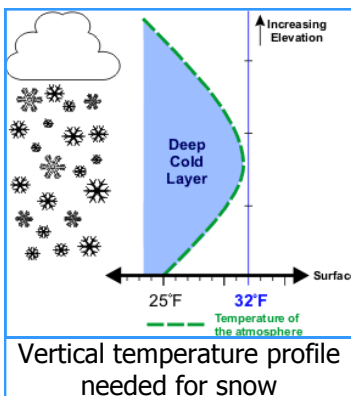




Winter Weather Precipitation Types



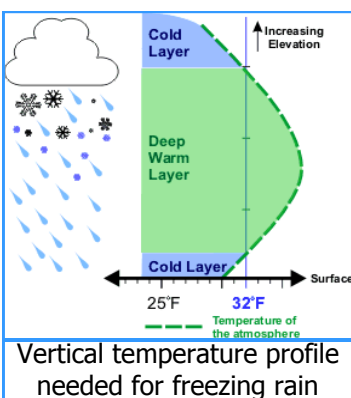
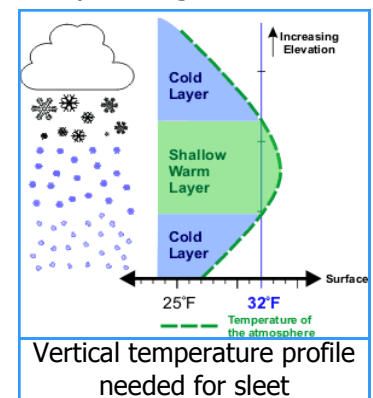
One of the difficult tasks for a forecaster is trying to figure out what type of precipitation is going to occur in the winter. An important piece of the puzzle involves determining the temperature throughout the troposphere (basically the lower 7 - 8 miles of the atmosphere) where the temperature usually decreases with height. However there are times when the temperature actually increases with height in the lower troposphere and this can cause problems for the forecaster.



Snow/Rain Process:

So how does the temperature affect the precipitation type? In general, ice crystals form at heights where the temperature is several degrees below freezing. As they fall the crystals grow by several times, eventually forming snowflakes. If the entire column of the atmosphere remains below freezing all the way to the ground, we get **snow** (left). However, what happens if the snowflakes encounter a warm layer in the atmosphere that is above freezing? If the layer is warm and/or deep enough, the snowflakes melt and we get rain.

Sleet Process: If the warm layer is not quite as warm or as deep (let's say a degree or two above freezing for 500 feet) the snowflakes will partially melt, and then refreeze as they encounter a cold layer closer to the ground. By the time they hit the ground they look like tiny frozen ice balls known as sleet (right).



Freezing Rain Process: This process is similar to sleet formation except that the warm layer completely melts the snowflakes into raindrops. But before reaching the ground, the rain falls through another cold layer. If the air temperature in this layer and at the ground is several degrees below freezing, the rain drops will instantaneously freeze wherever they land (on trees, sidewalks, roads, etc.), causing a potential hazardous situation known as freezing rain (left).

Forecasters use information from radiosondes (weather balloons) to determine, among other things, the temperature profile of the atmosphere. Due to cost factors, radiosondes are normally only launched twice per day at NWS sites across the country. In Nebraska, they are launched from the North Platte and Omaha offices. Due to the sparse coverage in both space and time, one can see where it might be tough to determine whether we will get snow in Chadron, while those in York may see a mixture of sleet, rain, and freezing rain.

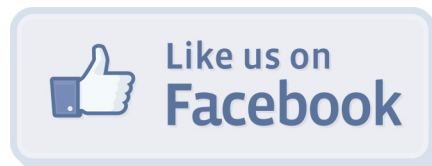


You can't go anywhere these days without hearing the words "Like Us On Facebook" or "Follow Us On Twitter." The latest in the technology craze, social media has overtaken the world like wildfire.

Here at the National Weather Service, we are no different. Since joining the Facebook and Twitter worlds, NWS offices have strived to continue to improve our presence on social media and have better interaction with our customers. We use social media in a variety of ways, from educating the public on different weather topics, to weather related trivia. We share beautiful weather related photos, and let you take a look into the day in the life of a meteorologist. During severe weather, we try to keep you up to date on the latest radar trends, as well as reports we are receiving. On the other side of the spectrum, our customers share storm reports and photos directly onto our page, which lets both us and others know what is occurring. They can also ask questions and provide feedback on the services we provide.

However, since these social media platforms are not maintained by NOAA, we do not want our customers to rely strictly on our social media pages for our warning information. Make sure you continue to monitor NOAA Weather Radio, local TV media and our webpage www.weather.gov, for all of your warning information.

NWS Office	Facebook	Twitter
Cheyenne, WY	NWS Cheyenne	@NWSCheyenne
Goodland, KS	NWS Goodland	@NWSGoodland
North Platte, NE	NWS North Platte	@NWSNorthPlatte
Hastings, NE	NWS Hastings	@NWSHastings
Omaha, NE	NWS Omaha/Valley	@NWSOmaha
Sioux Falls, SD	NWS Sioux Falls	@NWSSiouxFalls



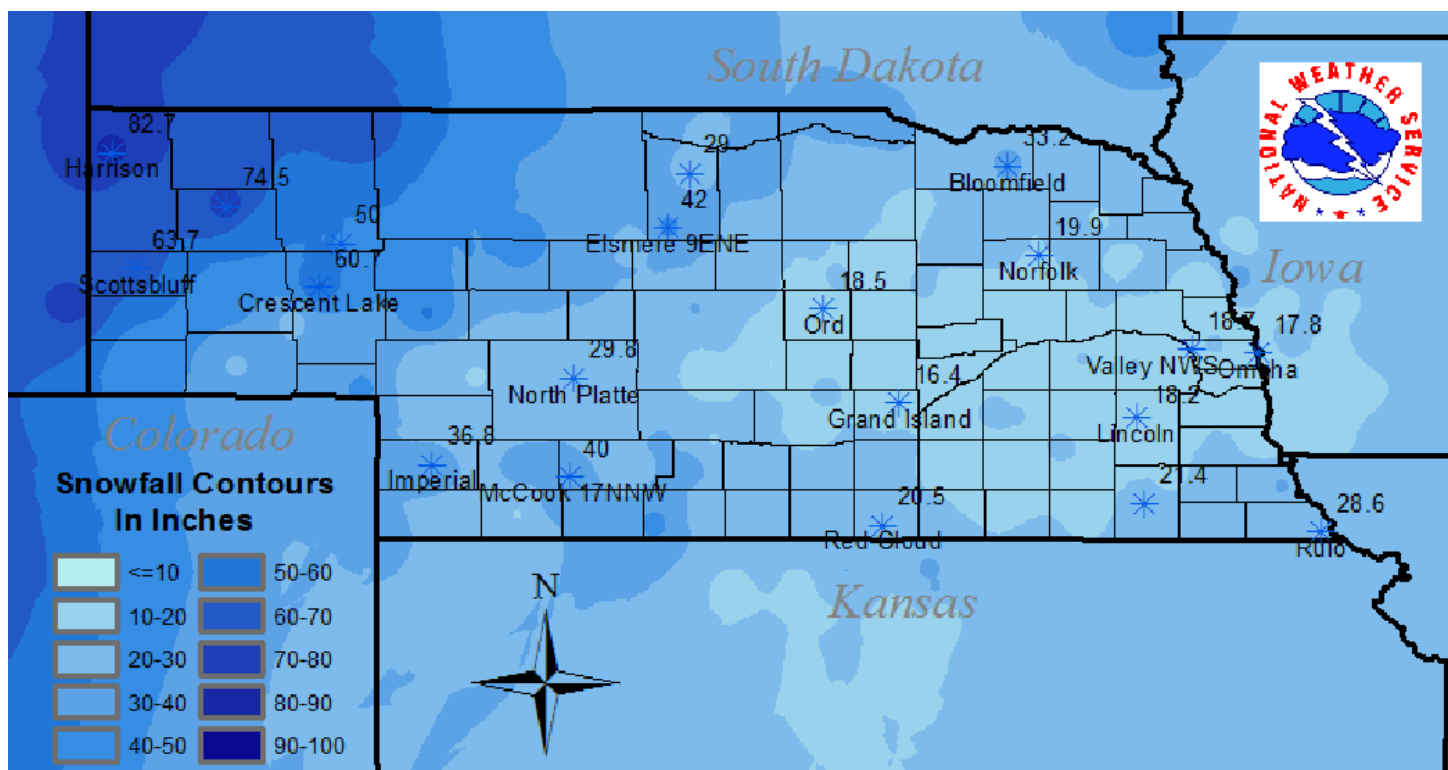
So please, "Like Us On Facebook" and "Follow Us On Twitter." Join in on the latest craze and learn a little about weather as well.



2013-14 Nebraska Winter Weather Summary



Statewide Snowfall Map 2013-2014



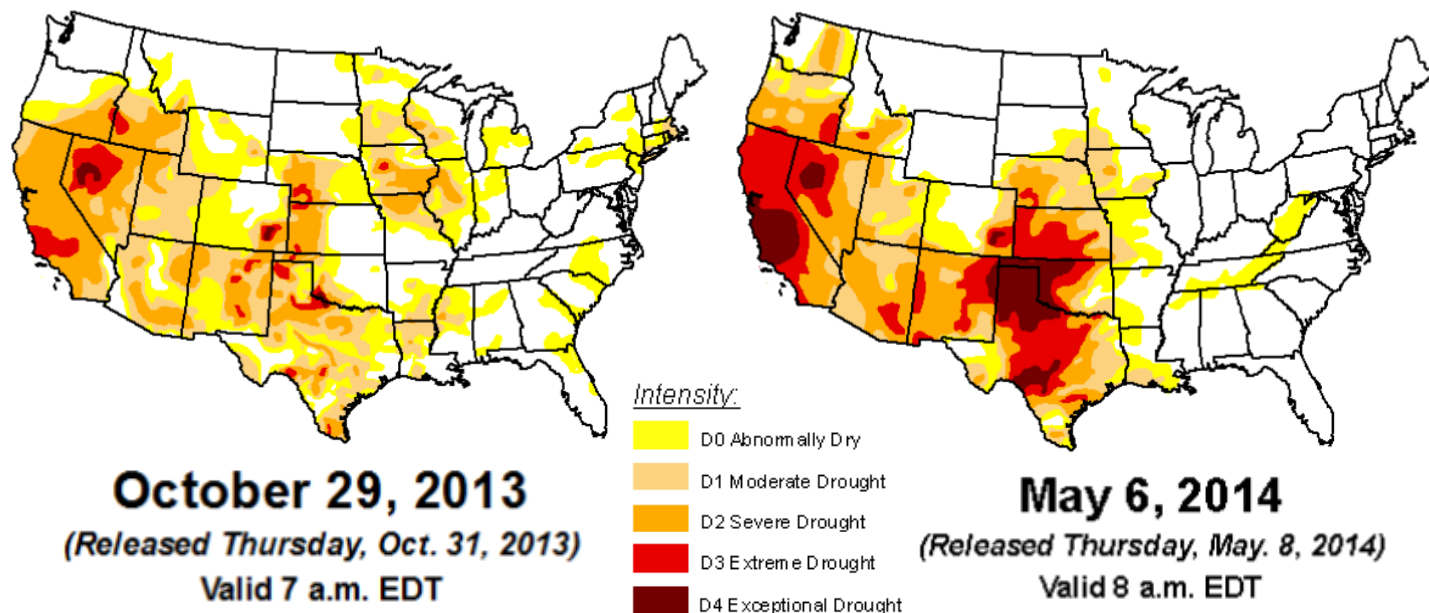
Seasonal Snowfall 2013-2014

Location	Normal (1981-2010)	2013-2014	% Normal	2012-2013	% Normal
Scottsbluff	42.1"	63.7"	151%	42.0"	100%
North Platte	28.5"	29.8"	105%	30.2"	106%
Valentine	33.3"	35.8"	108%	54.0"	162%
McCook	28.8"	40.0"	139%	35.1"	122%
Grand Island	29.0"	16.4"	57%	35.2"	121%
Norfolk	30.5"	19.9"	66%	27.3"	90%
Omaha	26.4"	17.8"	67%	35.7"	135%
Lincoln	25.9"	18.2"	70%	27.5"	106%

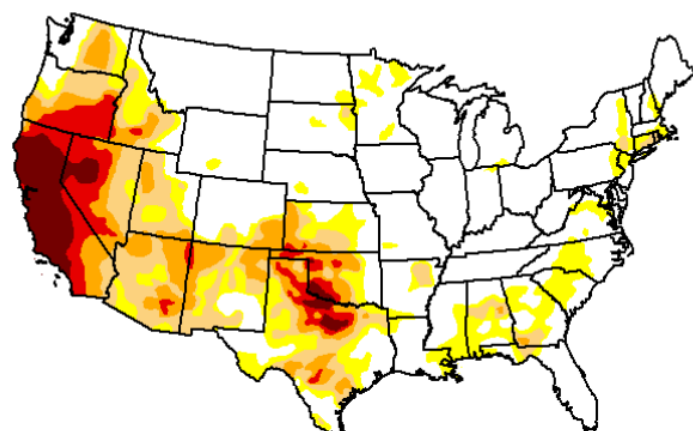


A Look Back Over the Year

Drought conditions worsened from October 2013 through May 2014. <http://droughtmonitor.unl.edu/>

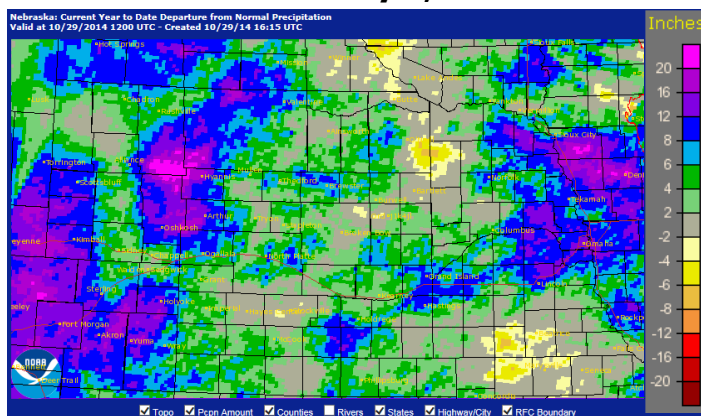


Plentiful summer and fall rains in June, August and September eased drought conditions across the region. We are starting out the winter with very little drought compared to last year.

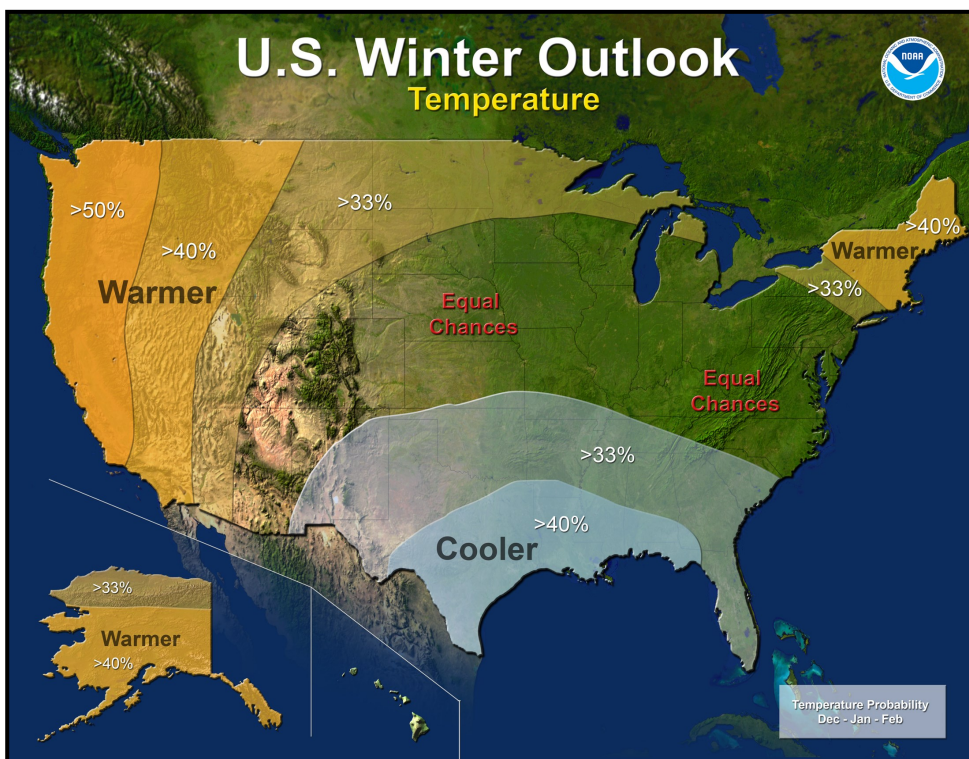


October 28, 2014
(Released Thursday, Oct. 30, 2014)
Valid 8 a.m. EDT

Rainfall Departure from Normal in Inches Since January 1, 2014

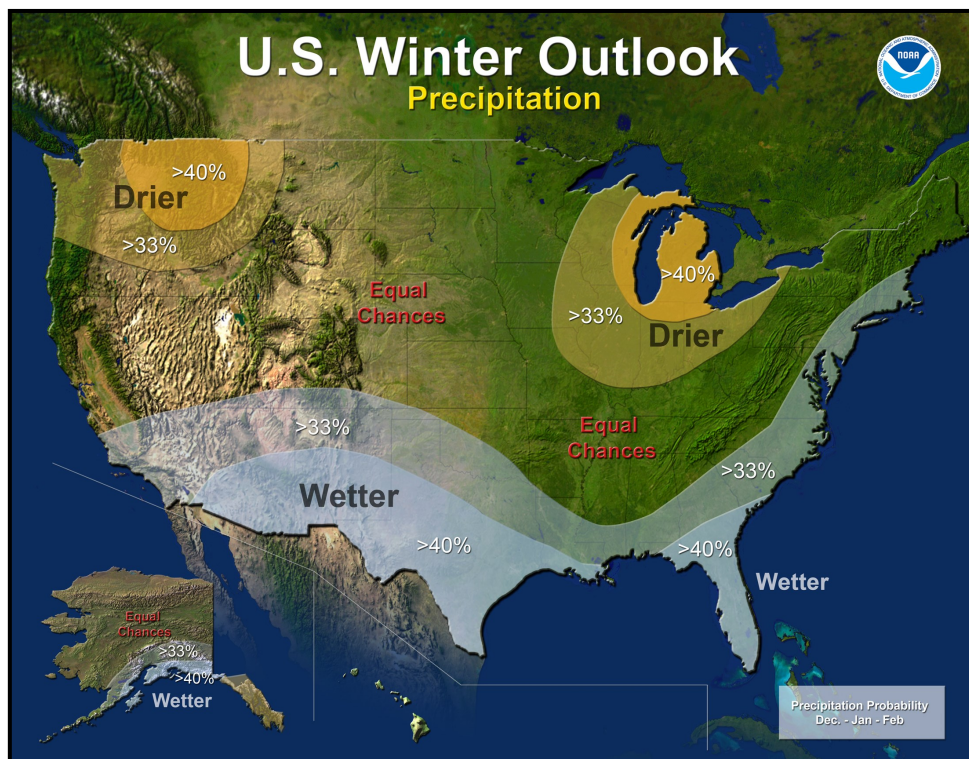


Most of the state is at or above normal for 2014 with pockets of significantly above normal and a few pockets below normal.



The **U.S. Winter Temperature Outlook** issued by NOAA's **Climate Prediction Center** in October calls for below average temperatures to be favored in parts of the south-central and southeastern United States, while above-average temperatures are most likely in the western U.S., Alaska, Hawaii and New England.

The **Precipitation Outlook** favors above-average precipitation across the southern tier, from the southern half of California, across the Southwest, South-central, and Gulf Coast states, Florida, and along the eastern seaboard to Maine. Above-average precipitation also is favored in southern Alaska and the Alaskan panhandle. Below-average precipitation is favored in Hawaii, the Pacific Northwest and the Midwest.



Last year's exceptionally cold and snowy winter across most of the United States, east of the Rockies is unlikely this year, although the Outlook does favor below-average temperatures in the south-central and southeastern states.

Next update available 11/20/14 at:

<http://www.cpc.ncep.noaa.gov/index.php>

Source: http://www.noaanews.noaa.gov/stories2014/20141016_winteroutlook.html



Western Nebraska Panhandle - Cheyenne, WY

The winter of 2013-2014 (which meteorologically is the period from December through February) turned out to be colder and wetter than normal for most of the Nebraska Panhandle. The Sidney area ended up getting close to normal precipitation after starting the winter very dry, seeing just 0.02 inch of precipitation in December.

The winter was characterized by a cold December especially over the northern part of the panhandle where average temperatures were 3-6 degrees below normal. January saw warmer than normal temperatures before flipping again in February with very cold conditions due to repeated surges of Arctic air. It was one of the coldest Februarys on record for some areas.

Temperatures:

The following table summarizes the monthly and overall winter average temperatures and the departures from normal for select sites over the area:

City	Dec. average temp.	Dec. departure from normal	Jan. average temp.	Jan. departure from normal	Feb. average temp.	Feb. departure from normal	Dec-Feb average temp.	Dec-Feb departure from normal
Alliance	20.2	-3.4	28.2	+4.0	16.7	-10.4	21.7	-3.3
Chadron	18.7	-5.7	28.4	+4.0	19.0	-8.4	22.0	-3.4
Harrison	19.2	-4.1	26.0	+2.6	15.6	-10.2	20.3	-3.9
Kimball	25.5	-0.8	27.6	+0.6	19.0	-10.0	24.0	-3.4
Scottsbluff	25.3	-0.8	30.2	+3.0	20.6	-9.8	25.4	-2.5
Sidney	27.8	-0.9	29.1	-0.1	20.2	-11.8	25.7	-4.3

This next table depicts the dates of warmest and coldest temperatures of the winter for selected cities as well as the warmest and coldest average daily temperatures. The total number of days with low temperatures at or below zero and the departure from normal is also noted:

City	Lowest temperature and date	Highest temperature and date	Lowest daily average temp. and date	Highest daily average temp. and date	Number of days with mins at or below zero
Alliance	-25 on Feb. 5*	63 on Feb. 16	-13 on Dec. 6	46.5 on Jan. 25+	24 (+7)
Chadron	-23 on Dec. 6	65 on Feb. 16	-10.5 on Dec. 6	49 on Jan. 25	25 (+10)
Harrison	-27 on Feb 5,7	55 on Feb. 17	-16 on Feb. 7	43.5 on Jan. 25	27 (+13)
Kimball	-27 on Feb. 5,6	63 on Dec. 19	-14 on Feb. 6	46 on Jan. 19#	16 (+7)
Scottsbluff	-20 on Feb. 5	68 on Feb. 16	-8.5 on Feb. 5	50.5 on Feb. 16	20 (+8)
Sidney	-24 on Feb 5,6	69 on Dec. 18	-11 on Feb. 5	49.5 on Dec. 2	18 (+9)

* and December 6th + and December 2nd # and December 19th



2013-14 Nebraska Winter Weather Summary



Western Nebraska Panhandle - Cheyenne, WY *cont.*

Precipitation:

Winter precipitation turned out to be generally above average across the area. The southern panhandle had a very dry December before recovering in January and February. February was quite moist with plenty of snowfall across many areas. February saw 15-20 inches of snowfall at many locations with total seasonal snowfalls for the season (October through May) ranged from around 45 inches over the southern panhandle to over 80 inches across the northwest part.

The following table shows the December through February liquid precipitation amounts and their departures from average:

City	December pcpn and departure	January pcpn and departure	February pcpn and departure	Total pcpn and departure
Alliance	0.54 (+0.22)	0.27 (+0.09)	0.98 (+0.60)	1.79 (+0.91)
Chadron	0.66 (+0.14)	0.20 (-0.16)	0.82 (+0.21)	1.68 (+0.19)
Harrison	0.42 (+0.02)	0.31 (-0.01)	1.11 (+0.73)	1.84 (+0.74)
Kimball	0.04 (-0.42)	0.41 (+0.12)	1.15 (+0.80)	1.60 (+0.50)
Scottsbluff	0.63 (+0.12)	0.46 (+0.05)	1.14 (+0.54)	2.23 (+0.71)
Sidney	0.02 (-0.52)	0.22 (+0.02)	0.73 (+0.41)	0.97 (-0.09)

Did You Know?

What is the greatest annual snowfall total in Nebraska?

*112.0 inches in 1973
Harrison, NE*



Did You Know?

What is the coldest temperature recorded in Nebraska?

*-47 degrees-December 22, 1989
Osh Kosh, Nebraska*



Western & North Central Nebraska - North Platte, NE

The winter season of 2013-2014 lasted eight months, where the first snow fell in early October - then during each month until mid May. The season was remembered for the number of Arctic fronts that brought the chance for snow, bitter cold wind chills, high winds and some significant snows to the northwest sandhills. While no record snowfall was observed, the snowfall total of 70 inches was the greatest and was recorded in northern Sheridan County (see statewide snow map on page 16).

October - A Blizzard

The first winter storm of the season was a blizzard that occurred from **October 4-5th**. The storm impacted the northern Nebraska Panhandle east into northern Sheridan County. The storm brought severe weather followed by strong winds, colder air and heavy snow. A foot of snowfall was forecasted and those north of Highway 20 experienced periods of heavy snow. The snow accumulated with amounts up to 2 feet and snow drifts to 6 feet deep in some areas north of the highway.



Photo courtesy of the Sheridan Journal.
Highway 27 looking north of Gordon.

The strong winds and heavy snow reduced visibilities and caused extensive tree damage along the Highway 20 corridor, as leaves had yet to fall. The storm caused highways in the area and nearby schools to be closed. The storm was a reminder of how weather conditions can change in such a short time span.

December - Arctic Air Arrives

Much colder air arrived the first week of December. A storm system moved through between the **3rd-4th**, where snow fell across the north. Cherry County was hit hardest with a swath of 10 inches or more seen; the greatest was 15 inches in Cody. However, the Arctic air behind the system produced bitter cold wind chill readings through the 7th. Some observed wind chills are shown for the 5th and 6th in Table 1. **Frostbite can occur in 10 minutes or less at these values.**

Station	Coldest Wind Chills Dec. 5th	Station	Coldest Wind Chills Dec. 6th
Rushville 1 WNW	-41	Valentine Airport	-45
Gordon 6E	-39	Whiteclay	-44
Ellsworth	-37	Newport	-35
Ogallala 3E	-33	Springview 6S	-32

Table 1 - Coldest Wind Chills December 5 & 6, 2013



2013-14 Nebraska Winter Weather Summary



Western & North Central Nebraska - North Platte, NE *cont.*

January - Arctic Push & High Winds

Light snow fell in January, yet it was the high winds and colder air that produced the greater impacts. The first of several Arctic fronts moved south on the **5th** that produced subzero overnight lows - the coldest on January 6th when the temperature in Gordon dropped to 18 below zero and produced dangerous wind chills. On the **16th**, dry conditions and high winds sustained at 40 to 50 mph created plumes of dust across southwest Nebraska. The NDOR west facing camera at Big Springs (shown right) showed the impact of reduced visibility on Interstate 80.



February & March - Snow in the Southwest & Central

February was the snowiest month as a combined observed snowfall total across the area was 505.7 inches. The continued surges of arctic air created periods when subzero temperatures occurred to include **February 6th**. On the 6th air temperatures across the west central dropped to a brutal 20 degrees below zero or colder; the coldest recorded was 25 below zero near Big Springs. On **February 22nd**, a winter storm dropped six to nine inches of snow across the southwest.

In March, a winter storm on the **18th** produced a narrow band of heavy snow in western Custer, Blaine and Rock counties. Snowfall amounts ranged with up to a foot recorded in Arnold. The heavy snow and high winds led to deteriorating road conditions and road closures in part of Lincoln and Custer counties.

May - Last Snow Fall

A list of the snowiest places are shown in Table 2, where Gordon tops the list. On **May 14th**, the Cooperative Observer at Gordon recorded 10 inches of snowfall, bringing the season's snowfall total to 70 inches, as well as the close to the 2013-2014 snowfall season.

May was one of five months where the Gordon area saw snowfall amounts of 10 inches or more.

Reporting Station	2013-2014 Total Snowfall (")
Gordon 6N	70
Crescent Lake NWR	60.7
Arthur	51
Ellsworth	50
Kilgore 1NE	48.1

Table 2 - 2013-2014 Snowfall Totals



Extreme Southwestern Nebraska - Goodland, KS

Overview

Late 2013 went into the log book as cool and dry. Drought conditions which developed in mid-2012 were still prevalent through the fall and early winter of 2013-2014. Snowfall increased in January and February. One storm in late January brushed extreme southwest Dundy County with Haigler reporting 14 inches of snow while the remainder of the county received lesser amounts. The table below shows temperature departure from normal, and February was noteworthy with readings 6-9 degrees below normal across extreme southwest Nebraska. Temperatures in late winter and early spring were near normal with snowfall near to below normal.

Station	Temperature Departure From Normal						
	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014
Benkelman	-0.9	-0.3	-0.7	2.0	-7.1	1.3	1.8
Culbertson	-1.0	-1.1	-2.0	1.4	-9.2	-1.5	1.1
McCook	0.5	1.0	-1.8	2.6	-7.6	0.7	1.9
Trenton Dam	-0.2	-0.3	-0.4	3.5	-6.4	0.5	1.6

Table 1: Temperature departure from 1981-2010 normal. Red shading is above normal, blue shading is below.

Seasonal (Oct. 2013 - April 2014) snowfall was variable across the three counties as shown in the table below. Snowfall totals last season ranged from near 20 inches at Trenton Dam in Hitchcock County to almost 32 inches at McCook in Red Willow County. Normal values range from 24-30 inches. February 2014 was especially snowy with totals 3-12 inches above normal, although for the most part, major winter storms were lacking.

Station	Oct. 2013-Apr 2014 Snowfall	1981-2010 Normal	Percent of Normal
Benkelman	24.8	29.8	83
Culbertson	30.8	28.2	109
McCook	31.7	28.7	110
Trenton Dam	19.5	24.5	80

Table 2: Oct. 2013 – Apr 2014 Snowfall, Normal Snowfall, Percent of Normal Snowfall



Extreme Southwestern Nebraska - Goodland, KS *cont.*

October - December 2013

The main weather story to close out 2013 was a continuation of drought conditions. Precipitation continued below normal and big snows and strong winds were absent. The drought rating for Dundy, Hitchcock and Red Willow Counties continued in the Severe to Extreme category through December. The first Arctic surge of the season didn't arrive until **December 9th** when temperatures plunged well below normal and wind chill values dropped below -20 F.

January - April 2013

The first major snow of the season arrived in late January when a storm system dropped over a foot of snow in Yuma County Colorado and a small part of Dundy County on the **31st**. Snowfall ranged from 14 inches at Haigler to 3 inches near Palisade. Little in the way of wind accompanied the storm system which made the heavy snow event more bearable. Several other strong wind events were reported in January however. Winds gusted near 60 mph from late morning through afternoon on **January 16th** and again on **January 26th**.

Another surge of Arctic air arrived **February 5th**. Recent snowfall from the late January storm combined with the fresh blast of cold air produced wind chill values below -25 F. Although temperatures warmed a bit during the day, by sunset, wind chill values dropped below -25 F once again.

The main weather event during March was a strong cold front which surged through the area on the **31st** with north winds gusting to 60 mph. Hitchcock and Red Willow Counties received the strongest winds which created low visibility in blowing dirt. The strong winds also helped a grass fire get out of control near Highway 34, which generated a small area of dense smoke causing the road to be shut down for a short time.

By the end of April, continued below normal precipitation resulted in no change in the drought status. The area was rated as being in Severe (D2) to Extreme (D3) drought. A large, intense upper low pressure area stalled over the Central High Plains on the **27th through the 29th** of April, producing three days of unusually strong winds which gusted between 55 and 60 mph, reducing visibility in blowing dirt at times.



2013-14 Nebraska Winter Weather Summary



South Central Nebraska - Hastings, NE

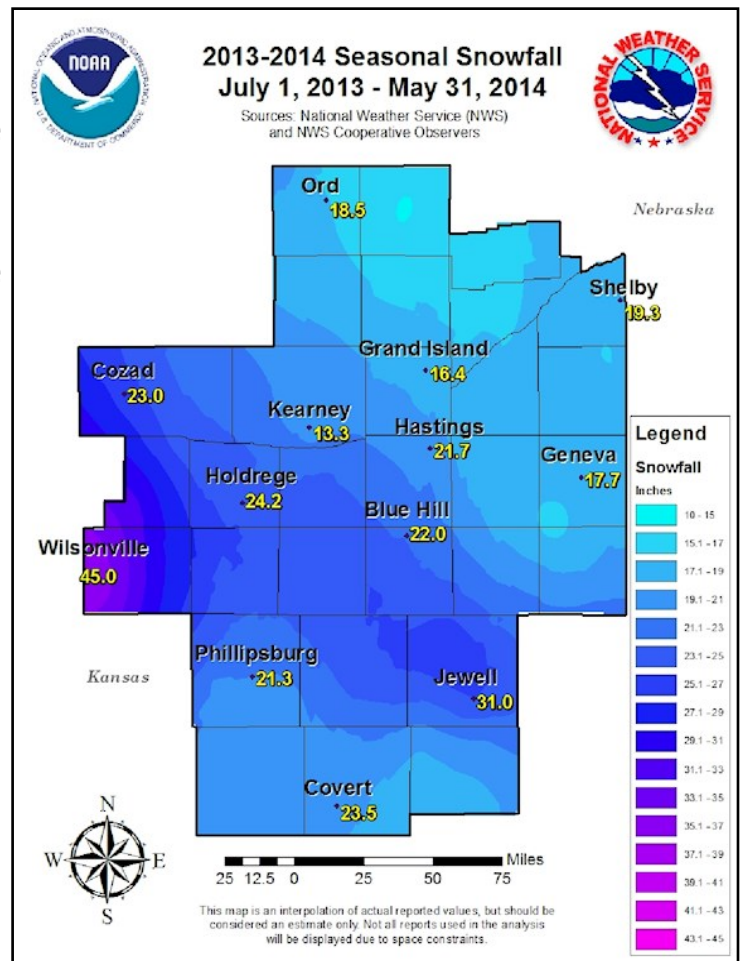
The 2013-14 winter season started on **November 5th**, with northern parts of the area in Valley, Greely and Sherman Counties receiving anywhere from 1-4 inches of wet, slushy snow. Beneficial rainfall also fell, with the highest total of 2 inches reported near Geneva. The remainder of the month remained fairly quiet, with the exception of some strong northwesterly winds developing on the **17th**, when gusts over 50 MPH were reported in mainly western portions of the area.

Generally quiet conditions ushered in the start of **December**, before the first widespread snowfall occurred on the **7-8th**. This snow fell in a very cold airmass, making for unusually dry and fluffy snow, but thankfully winds were light. Locations northwest of a line near Elwood-Kearney-Grand Island-Osceola only reported snow amounts in the 0.5 to 2.5 inches range. Meanwhile, the area south of that line caught the brunt of the storm, with widespread amounts of 3-7 inches reported.

The rest of the month was fairly quiet, though another bout of strong northwesterly winds affected the area on **December 28th**, gusting at times to or near 50 MPH. The front responsible for these winds dropped near record high temperatures that afternoon in the upper 50s to mid 60s to the low teens and single digits by the next morning.

It's safe to say the month of January across south central Nebraska could be described in one word: **WINDY!** Between the dates of **January 14th through the 20th**, there were 4 separate days with strong winds, as well as on the **26th**. The events on the 14th, 18th, 20th and 26th were predominantly advisory level events (sustained 30-40 MPH and gusts less than 58 MPH), though a few gusts of 58 MPH and higher were recorded.

The 16th was a clear high wind warning level event, with widespread sustained speeds of over 40 MPH (including 53 MPH at Grand Island) and many gusts over 58 MPH (73 MPH was reported by a mesonet site by Norman). Blowing dust was an issue, with visibility down to 2 miles at times. Other gusts included 64 MPH at Grand Island, 63 at Ord, 62 MPH at Hastings, 61 MPH at Kearney and 58 MPH at York.





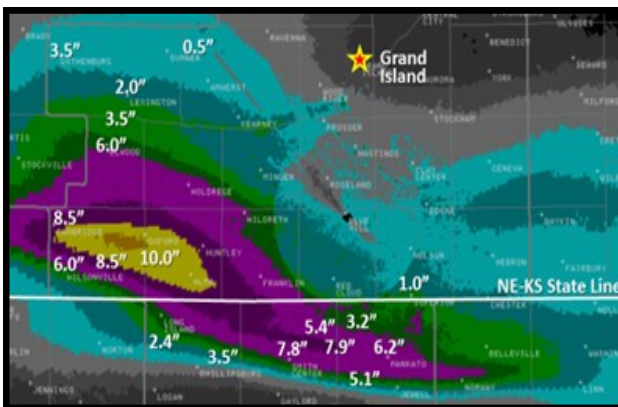
2013-14 Nebraska Winter Weather Summary



South Central Nebraska - Hastings, NE *cont.*

Just a few days into **February**, the next round of accumulating snowfall to the area, with 2-8 inches of snow falling on the **4th**. While much of the northwest half of the area reported accumulations of 2 inches or less, several counties southeast of a line from Franklin to Osceola received a broader 3-4 inches with a few higher amounts. Winds were an issue, as sustained northerly winds generally 15-25 MPH and gusts around 35 MPH promoted drifting, low visibility and bitterly cold wind chills.

Once the snow ended, the arctic airmass and frigid temperatures remained. Low temperatures on both mornings of **February 5th & 6th** saw low temperatures in single to double digits below zero, with the coldest low temperature of -21 degrees reported at Ravenna on the 6th. A new record low temperature of -14 degrees was set in Hastings the morning of the 6th.



February 22nd brought a narrow band of heavy snow to a small area near the NE-KS state line (image to left). Unlike events where accumulations were more uniform across a larger area, this was more "all or nothing" as places in the main band received significant snow, while places only a few miles out of the main band received little. Totals were mainly in the 6-9 inch range, covering an area only about 10-15 miles wide from northern Furnas County through Harlan County. The highest totals in the area included 10 inches in Stamford, 8.5 inches in Cambridge and 7 inches in Beaver City.

Similar to February, the start of **March** will be remembered for its bitterly cold temperatures. Grand Island and Hastings tied or broke both the daily low and daily coldest high temperature records for **March 2nd**. Records date back to 1896 and 1907 respectively. Temperatures across the entire area topped out between a jarring 4-11°. Normal highs during this time of year are in the mid-40s!

The most notable winter event of March came on the **18th**, with 2-6+ inches of snow falling over areas along and west of Highway 183. The highest totals were west of Highway 283, across Furnas and Dawson Counties, where the heavy snow and strong winds resulted in near blizzard conditions. Over a foot of snow was reported in the Gothenburg area.

Most folks hope for a easy switch from winter to spring, but that was not to be the case in 2014, as **April 13th** brought a strong spring storm across the Plains. This storm brought a full gamut of weather, with strong to severe thunderstorms in the southeast to near blizzard conditions in the northwest. These conditions resulted in the closure Interstate 80 between Kearney and Elm Creek. The main area of 3-6+ inch amounts occurred within a band centered roughly 15 miles either side of a Beaver City-Ravenna-Wolbach line. As is typical of April snow, it did not stick around long as high temperatures two days later were back in the 60s.



2013-14 Nebraska Winter Weather Summary

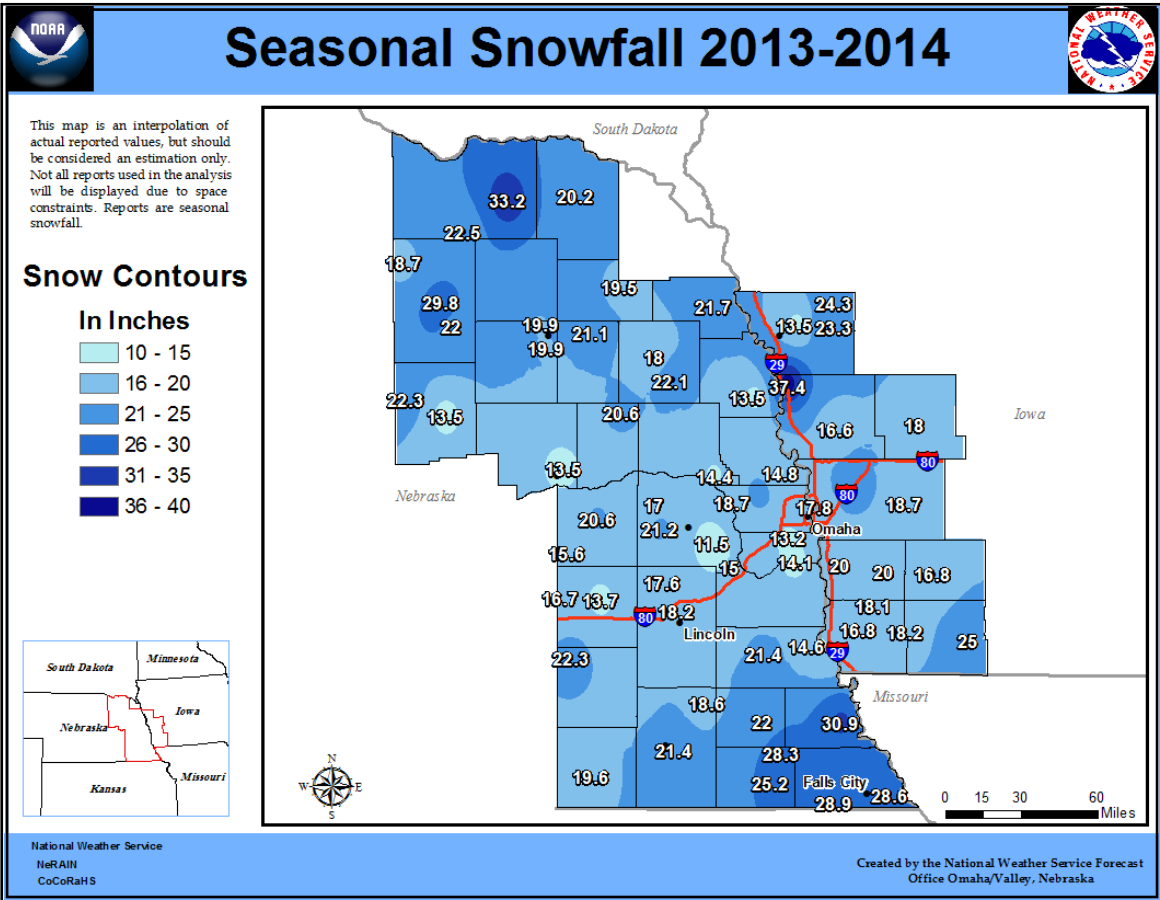


Eastern Nebraska - Omaha/Valley, NE

The winter of 2013-14 was quite a bit cooler than normal across the area, but it also was **less snowy and much drier than usual** (*table below*). Overall, the winter of 2013-14 brought several bouts of cold temperatures and windy conditions, with a few warming periods in between. Snow was infrequent, with only a handful of significant snow events through the winter.

	Omaha	Lincoln	Norfolk
Average Temperature (DJF)	21.6 °F	22.3 °F	20.6 °F
Ranking (coolest)	27th	19th	30th
Total Precipitation (DJF)	1.06"	1.08"	0.70"
Ranking (driest)	9th	10th	4th
Total snowfall (Full 2013-14)	17.8"	18.2"	19.9"
Ranking (least snowy)	18th	12th	14th

Normal Seasonal Snowfall (1981-2010): Omaha 26.4" Lincoln 25.9" Norfolk 30.5"





Eastern Nebraska - Omaha/Valley, NE *cont.*

The first snow of the season arrived roughly on time across the area. In Norfolk, 0.8 inches of snow fell on **November 5th**, with rain changing to mixed precipitation and then to snow. At Omaha and Lincoln, the first snow arrived on **November 21st**, with snow totals under a half inch in both locations and with 0.1 inches also falling in Norfolk. Typically the first measurable snow (0.1" or more) is reported around the second week of November. The average first measurable snow for the period of record is around November 13th at Omaha, November 18th at Lincoln, and November 8th at Norfolk.

Low snow totals continued through December, with cold air settling into the region for much of the month. In the midst of a cold snap on **December 6-9th**, a winter storm on **December 8th** brought 4-6 inches of snow across southeast Nebraska, delivering the first significant snowfall of the season. Lincoln recorded 5.4 inches of snow, with 2.0 inches in Omaha and 1.8 inches in Norfolk. Quiet weather, with temperatures bouncing between below and above normal readings, dominated the middle of the month. Another snow storm clipped southeast Nebraska and southwest Iowa on **December 22nd**, bringing 6-8 inches of snow south of Interstate 80, while areas along and north of Interstate 80 received little or no snow at all. The snow left enough on the ground for a white Christmas in southeastern Nebraska and southwestern Iowa, while the metro areas of Omaha and Lincoln and points to the north had a brown Christmas.

During January, the weather pattern was notable for cold snaps with warming periods in between, along with several **WINDY** days. During the month of January alone, Omaha, Lincoln and Norfolk each saw **five** days with wind gusts reaching **50 mph or higher**, and many sites reported gusts of **60 mph** or greater at least once during the month. However, the pattern was not favorable for snow. Just a few light snows of around an inch or less fell through the month.

More substantial snow returned to the region on **February 4-5th**, and once again, the higher amounts of 4-6 inches were focused south of Interstate 80 in southeastern Nebraska and southwestern Iowa. Another Arctic airmass brought a cold snap again early in the month, especially following the snowfall, with warmer temperatures again breaking through following the cold. The next significant snow event waited until **February 24-25th**, and this time the heavier snow totals of 4-7 inches nudged into northeastern Nebraska, tapering quickly to the south to an inch or less. February was the snowiest month of the winter in all locations, with 9.5 inches in Omaha, 7.4 inches in Lincoln and 6.9 inches in Norfolk. For Omaha, the snowfall in February amounted to half of the total for the entire winter.



Eastern Nebraska - Omaha/Valley, NE *cont.*

Another snow storm on **March 1-2nd** brought the month in like a very chilly lion, with snowfall amounts mainly 2-5 inches across the area. Temperatures were far below normal on March 2nd, with the high temperature not rising above zero in Norfolk. After the early part of the month, periods of milder temperatures returned, before yet another cold snap late in the month brought cold temperatures back, and with little additional snow through the month. April snow showers visited northeastern Nebraska on both **April 3rd** and **April 13th**, making April the second snowiest month in Norfolk in the winter of 2013-14 behind February. Light snows also visited Omaha and Lincoln on April 13th, marking the last measurable snow of the season, and mild weather followed quickly as winter came to a close.

Impacts from the winter of 2013-2014...

As a result of the dry, cold, and lack of snow during the winter, winterkill to turf and plants was extensive. The University of Nebraska-Lincoln turfgrass professionals specifically cited the lack of snowcover and lower temperatures as a reason for the extensive turf damage, but also hopes to study this further for more information on the phenomenon. In addition, the dry and windy conditions contributed to numerous grass fires and restarts in March and April. Prescribed burns; common across eastern Kansas and local areas during the spring experienced a number of days where smoke traveled into eastern Nebraska; periodically elevating particulate and ozone levels.

Slips, Trips and Falls...

Most slips and falls occur the following days after a winter storm. Below are tips for walking on the snow and ice. Take care and have a safe day after the storm.

- **Wear appropriate shoes.**
- **Walk in designated walkways.**
- **Watch where you are walking.**
- **Walk slowly and don't rush! Walk like a penguin.**
- **Plan ahead and give yourself enough time.**

